Appendix G -Documentation of Livestock Grazing Analysis

Four questions were used to focus the analysis:

1. What effect will proposed utilization levels in each alternative have on currently permitted head months and forage production on the Grassland?

2. What effect will utilization levels and treatments proposed in each alternative have on currently permitted head months and forage production over the 10-year plan period?

3. What irretrieveable losses will occur for livestock grazing during treatments proposed in each alternative and over the long-term?

4. What general long-term effects will occur to currently permitted head months and forage production once desired sagebrush canopy covers are reached in each alternative (50-100 years).

Forage Production

An important component of range management and the calculation of livestock grazing levels is the ability of the land to produce forage. Four separate forage production calculations were made:

1. Using average production based on vegetation understory
2. Using transect data from the Westside Ranger District, Malad Office
3. Using a professional assessment from Dr. Alma Winward, Region 4
4. Using research study near Holbrook, Idaho by Hull and Klomp

The following table displays the average forage production expected from the areas determined to be capable of supporting livestock grazing on the Curlew NG. ***The "Average production per acre per year" column reflects conservative estimates of forage production based on existing acres of vegetation. They are applied as a coarse filter to help determine and compare effects of the various management options described in the alternatives and will not be used to set specific stocking levels. Productions figures do not represent absolute peak biomass production, nor do they account for additional fall growth. They do not represent absolute production values or the range in productivity for a given site due to climatic variability or site-specific conditions. This data is not to be used for stocking rate determinations without other supporting data and site-specific analysis.***

The computation formula provides an estimated figure referred to as "head month." A head month is defined as the amount of time that livestock use forage, regardless of the type of livestock. For example, a cow/calf pair grazing a particular area for one month equals one head month. In general terms, it is estimated that a cow/calf pair consumes approximately 34 pounds of forage per day.

Table 1. Total Existing Average Production Per Year on the Curlew National Grassland by Native, Crested Wheatgrass, and Bulbous bluegrass sites

Capable Acres	Vegetation Type	Existing Avg. Production Per Acre/Per Year (Air dry weight)	Total Existing Avg. Production Per Year
12,000	Native	700 lbs/acre/yr	8.4 million lbs/yr
30,400	Crested Wheatgrass	1,100 lbs/acre/yr	33.4 million lbs/yr
5,200	Bulbous Bluegrass	500 lbs/acre/yr	2.6 million lbs/yr
47,600			44.4 million lbs/yr

Calculation of Head Months By Alternative based on Utilization Levels and Proposed Treatments in each Alternative for Existing Forage Production and Predicted Forage Production After 10-years

This section discusses the calculation for estimated head months by alternative. ***It should be understood these calculations are very general as a coarse filter to compare estimated head months by alternative. Capacity and stocking levels may vary by allotment based on site-specific conditions that are not reflected in these calculations. Therefore, these computations should not be used to establish stocking levels or capacity without site-specific analysis.***

Each alternative provides a variation of livestock utilization rates. Some alternatives provide more than one utilization rate. For example, some alternatives may propose a riparian utilization rate, a native vegetation utilization rate, and a non-native vegetation utilization rate.

The second central question in the analysis deals with proposed treatments in each alternative and what effect these treatments will have on forage production and head months over the 10-year planning cycle and on long term goals (50-100 years) if treatments were to continue over time.

Most proposed treatments focus on sagebrush canopy cover – retaining, increasing or reducing canopy cover based on the emphasis in each alternative. Some minor treatment in mountain brush is proposed in some alternatives, but treatments would have a limited effect on existing forage production.

This part of the analysis uses the existing condition of sagebrush canopy cover classes and the predicted 10-year outcome of treatments on sagebrush canopy cover to estimate existing head months and expected head months at the end of the 10-year planning cycle. (See VDDT model discussion in Appendix E.)

Methodology

The first step in the analysis was to compute estimated forage production in each of the sagebrush canopy cover classes. Limited information is available to determine forage production under canopy cover. Three calculations were completed and compared to the average production displayed above.

- **First Forage Production Calculation, based on District Transect Data on file at the Westside Ranger District, Malad Office.**

Based on work by Rittenhouse and Sneva (1976), Robert Kindschy in "Crested Wheatgrass in the Ecosystem" (Walla Walla, Washington – Interior Columbia Basin Ecosystem Management Project, 1994) suggests that a 4% decline in production occurs for every 1% increase in sagebrush canopy cover. For conservative estimates, a factor of 4.5% was used rather than 4% in the calculation. Using this assumption, forage production was calculated for each of the three canopy cover classes as follows:

0-5% cc - Transect data on file indicates production in 0-5% canopy cover varies on the Grassland from 2,700 pounds per acre on very productive sites to around 1,800 pounds on less productive sites. For the analysis the more conservative production rate of 1,800 pounds per acre was used.

6-15% cc – Using a mid point of 2.5% in the 0-5% cc class, and a mid point of 10.5% in the 6-15% cc class, an 8% increase in canopy cover was used to calculate production using the following:

8 x 4.5% = 36% reduction in production from the 0-5% cc class.
36% of 1,800 pounds = 698 lbs. (1800 lbs. – 698 lbs. = 1152 lbs).

>15% cc – Using a mid point of 13 between 0% cc and 25% cc, a 13% increase in canopy cover was used to calculate production using the following:

13 x 4.5% = 59% reduction in production from the 0-5% cc class.
59% of 1800 lbs. = 1,062 lbs. (1800 lbs. – 1,062 lbs = 738 lbs)

Final Estimated production based on above

0-5% canopy cover	**= 1,800 lbs./per acre**
6-15% canopy cover	**= 1,150 lbs./per acre**
>15% canopy cover	**= 740 lbs. per acre**

Using the production figures shown above, the existing suitable acres in each canopy cover type, the 10-year outcome in canopy cover after treatment based on the VDDT model, and the long-term desired canopy cover, vegetation production was calculated for each alternative based on suitable acres for livestock grazing in each alternative.

Once total pounds of forage available on suitable acres after treatments was computed, the next step was to compute head months for year 0 and year 10, based on estimated existing forage production and the predicted 10-year forage production using utilization rates proposed in each alternative.

In alternatives that propose various utilization rates for different vegetation types, a gross calculation was made on what percentage of total forage production was attributable to each vegetation type. Using the tables in Step 2 for each alternative, percentages were derived to use in the computation.

Table G.1 shows the **high range forage production** calculation for each alternative and the potential outcome in head months for existing, 10-year outcome, and long-term goal attainment contained in each alternative.

Forest Service, Intermountain Region, Rangeland Ecologist

Dr. Alma Winward provided his professional assessment of forage production under the three canopy cover classes used throughout this analysis. Based on measured production of herbaceous material, Dr. Winward estimates production can be as low as 50 pounds per acre where the sagebrush canopy cover is about 40% and bulbous bluegrass is present. At localized areas, Dr. Winward estimated about 1,800 pounds per acre where the canopy cover is removed and the herbaceous matter is primarily crested wheatgrass. Herbaceous production is likely highest over the long-term when canopy cover is about 5%, primarily because sagebrush draws nutrients from deep in the soil profile and recycles them to the surface, along with other reasons. When canopy cover reaches 12-15% in basin and mountain big sagebrush, production begins to decrease and drops rather quickly as canopy cover increases.

Dr. Winward estimates the following production levels for each of the three canopy cover classes:

0-5% canopy cover = 1,400 to 1,600 pounds per acre, with best sites at 1,800 pounds per acre
6-15% canopy cover = 1,200 to 1,400 pounds per acre
>15% canopy cover = 500 to 1,200 pounds per acre with some areas as low as 50 pounds per acre with maximum sagebrush canopy cover density with the presence of annuals and bulbous bluegrass

Table G.2 shows the **mid range forage production** calculation of conservative forage production in sagebrush canopy cover classes. A total of 1,500 pounds per acre was used for the 0-5% canopy cover, 1,150 pounds per acre was used for the 6-15% canopy cover, and 500 pounds was used for >15% canopy cover

Third Forage Production Calculation, based on research around Holbrook, Idaho by Hull and Klomp

Prepared by Carol Lyle, Ecosystem Branch Chief, Caribou-Targhee NF 6-20-00

In order to make some estimates of potential head months for permitted livestock in each alternative, several assumptions were made in this calculation. Some assumptions were extrapolated from literature and other assumptions were based on professional experience. No recent production data is available on either seeded sites or native sites for the Grassland. Based on research done around Holbrook (Hull and Klomp), NRCS range site data, and personal conversations with Dr. Alma Winward, assumptions were made on potential production of sites under various sagebrush canopy covers. Literature shows that sagebrush affects herbaceous production, especially in greater than 20% canopy covers. The amount of production depends on the kind of sagebrush present and composition in the understory.

Between the 0-5% canopy cover class and the 6-15% canopy cover class, it was assumed production would drop as average of 20%. In the greater than 15% canopy cover, production is heavily affected. A reduction of 40% was made in production for the greater than 15% canopy cover from the production in the 6-15% canopy cover class.

Crested wheatgrass is very competitive with sagebrush, because crested wheatgrass root systems are in similar parts of the soil profile (Hull and Klomp). These root systems begin growing generally at the same time in early spring. Native vegetation does not generally start greening up as early in the spring. Root systems in native vegetation do not have the same adaptability that crested wheatgrass has to take advantage of the soil surface moisture.

Seeded sites have shown more variability in annual production (Rumsey) based on early growing season precipitation amounts. Native herbaceous vegetation is more stable in its production and more likely to maintain itself during drought.

Sites seeded with crested wheatgrass have the potential to out-produce native sites by two to three times in good moisture years (West, Hull, Bastian). It was also assumed that native sites on the Grassland are not in excellent condition. Most production figures are given for ranges in excellent condition. Figures were adjusted downward based on personal experience (Winward).

Livestock grazing on the Grassland is currently managed at a 60% utilization level and administered through Allotment Management Plans. Literature on the use of crested whatgrass shows this to be a moderate level of use for this species and will keep wolf plants from becoming established. Since all the bulbous bluegrass sites were planted with crested wheatgrass and one or more introduced species, an assumed 60% use rate on was applied to these sites also.

Where most of the native ranges are on shallower, rocky soils and the steeper topography, access is more difficult. Although they are not separate pastures, it was assumed these sites would be grazed less due, to forage selectivity and cattle distribution. A 37% use rate on native species was used to provide an overall use rate of 60% on key forage species. This is considered high for natives.

Carrying capacity is displayed in head months. This is the amount of forage necessary to maintain an animal for one month. Calves are counted with their mother as one unit if they are under six months of age prior to entering the Grassland for grazing. Thirty-four pounds of forage per day to support one cow and a 350-pound calf was used (1968 Range Analysis Handbook).

The Grassland consists of 47,600 acres. All acres were determined to be capable of supporting livestock grazing based on the capability criteria described in part one of this paper. Of these, 46,594 acres are currently suitable for grazing in Alternative A. Approximately 1,006 acres were determined to be unsuitable for livestock grazing. These acres include the tree rows and Sweeten Pond (about 500 acres), campgrounds, administrative sites and areas excluded by fencing (about 506 acres). It was assumed the unsuitable acres all occur in the sagebrush sites and were never seeded (i.e. they are part of the native range).

Total capable acres	47,600
Unsuitable acres	1,006
Total suitable acres	46,594
Acres of sagebrush	45,150
Unsuitable acres of sage	1,006
Total sagebrush acres	44,144
Other vegetation (shrub cover)	2,450
Total suitable acres by veg	46,594
Acres dominated by Pobu	5,200
Acres dominated by Agcr	30,400
Acres dominated by natives	11,000
Total suitable acres by understory	46,600

The Prevedel GIS analysis of sagebrush canopy cover showed the following:

17% of the vegetation has a 0-5% canopy cover of shrubs.
24% of the vegetation has a 6-15% canopy cover of shrubs.
59% of the vegetation has a >15% canopy cover of shrubs.

To get a weighted production by canopy class, the total herbaceous production was calculated for each canopy class. The total was divided by the number of acres in that canopy class. These are estimates considering the assumptions discussed above and understanding the annual variability that can occur in different understories under different kinds of brush species.

Calculations:

0-5% cc (17% of the CNG and assumed 17% of the suitable acres)
(46,594 x .17 = 7921 acres)

bulbous bluegrass*	610 ac x 500 lb/ac =	305,000 lb air dry forage
crested wheatgrass**	5,168 ac x 1,250 lb/ac =	6,460,000 lb air dry forage
native understory***	2,143 ac x 1,000 lb/ac =	2,143,000

Total air dry forage on 7,921 acres = 8,908,000 lb

Estimated production per acre (0-5% cc) = 8,908,000 lb / 7,921 ac = 1,125 lb/ac

In the 6-15% cc (24% of the CNG; assumed to be all suitable)= 46,594 x .24 = 11,183ac
(These production figures were reduced by 20% from the figures in the previous class to account for the increasing canopy cover of the sagebrush.)

bulbous bluegrass	1,363 ac x 400#/ac =	545,000#
crested wheatgrass	7,296 ac x 1,000#/ac =	7,296,000#
native understory	2,524 ac x 800#/ac =	2,019,200#

Total air dry forage on 11,183 acres = 9,860,000#

Estimated production per acre (6-15% cc) = 9,860,000# / 11,183 ac = 882 lb/ac

>15% cc (59% of the CNG; assumed to be all suitable)= 46,594 x .59 = 27,490 ac
(These production figures were reduced by 40% from the production figures in the previous class to account for increasing canopy cover of the sagebrush.)

bulbous bluegrass	3,218 ac x 240#/ac =	772,320#
crested wheatgrass	17,936 ac x 600#/ac =	10,761,600#
native understory	6,336 ac x 480#/ac =	3,041,280#

Total air dry forage on 27,490 ac = 14,575,200#

Estimated production per acre (>15% cc) = 14,575,200# / 27,490ac = 530 lb/ac

Using these production numbers, **Table G.3** displays the **low range forage production** for existing, 10-year, and long-term outcome on permitted head months on the Grassland

Table G.1. Calculation for each alternative and the potential outcome in head months using high range forage production estimates for existing, 10-year outcome, and long-term goal attainment contained in each alternative

	High Production	Based on	District	Transect	Data		
EXISTING							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	27,918	21,480	**6,438**	**30%**	~18,000	**9,918**	**55%**
Alt B	22,532	21,480	**1,052**	**5%**	~18,000	**4532**	**25%**
Alt C	16,244	21,480	**(-5,236)**	**(-24%)**	~18,000	**(-1,756)**	**(-10%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	25,591	21,480	**4,111**	**19%**	~18,000	**7,591**	**42%**
Alt F	20,844	21,480	**636**	**2%**	~18,000	**2,844**	**16%**
Alt G	20,118	21,480	**(-1,362)**	**(-6%)**	~18,000	**2,118**	**12%**
Alt H	23,124	21,480	**1,624**	**7%**	~18,000	**5,124**	**28%**
10-YEAR							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	31,516	21,480	**10,036**	**47%**	~18,000	**13,516**	**75%**
Alt B	21,427	21,480	**(-53)**	**(-<1%)**	~18,000	**3,427**	**19%**
Alt C	13,890	21,480	**(-7,590)**	**(-35%)**	~18,000	**(-4,110)**	**(-23%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	27,884	21,480	**6,404**	**30%**	~18,000	**9,884**	**55%**
Alt F	19,696	21,480	**(-1,784)**	**(-8%)**	~18,000	**1,696**	**9%**
Alt G	18,248	21,480	**(-3,232)**	**(-15%)**	~18,000	**248**	**1%**
Alt H	21,850	21,480	**370**	**1%**	~18,000	**3,850**	**21%**
LONG-TERM							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	33,868	21,480	**12,388**	**58%**	~18,000	**15,868**	**88%**
Alt B	25,139	21,480	**3,659**	**17%**	~18,000	**7,139**	**40%**
Alt C	11,766	21,480	**(-9,714)**	**(-45%)**	~18,000	**(-6,234)**	**(-35%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	36,632	21,480	**15,152**	**70%**	~18,000	**18,632**	**103%**
Alt F	21,508	21,480	**28**	**<1%**	~18,000	**3,508**	**19%**
Alt G	19,543	21,480	**(-1,937)**	**(-9%)**	~18,000	**1,543**	**9%**
Alt H	23,860	21,480	**2,380**	**11%**	~18,000	**5,860**	**32%**

Table G.2. Calculation for each alternative and the potential outcome in head months using mid-range forage production estimates for existing, 10-year outcome, and long-term goal attainment contained in each alternative.

	Mid Point	Calculations	Based on	Dr. Alma	Winward	6/16/00	
EXISTING							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	22,639	21,480	**1,159**	**5%**	~18,000	**4,639**	**26%**
Alt B	19,317	21,480	**(-2,163)**	**-10%**	~18,000	**1,317**	**7%**
Alt C	13,193	21,480	**(-8,287)**	**-38%**	~18,000	**(-4,807)**	**-27%**
Alt D	0	21,480	**(-21,480)**	**-100%**	~18,000	**(-18,000)**	**-100%**
Alt E	20,042	21,480	**(-1,438)**	**-7%**	~18,000	**2,042**	**11%**
Alt F	16,903	21,480	**(-4,577)**	**-21%**	~18,000	**(-1097)**	**-6%**
Alt G	16,339	21,480	**(-5,141)**	**-24%**	~18,000	**(-1,661)**	**-9%**
Alt H	18,752	21,480	**(-2,728)**	**-12%**	~18,000	**752**	**4%**
10-YEAR							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	26,106	21,480	**4,626**	**21%**	~18,000	**4,718**	**26%**
Alt B	17,757	21,480	**(-3,723)**	**(-17%)**	~18,000	**(-243)**	**(-<1%)**
Alt C	10,541	21,480	**(-10,939)**	**(-51%)**	~18,000	**(-7,459)**	**(-41%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	22,850	21,480	**1,370**	**6%**	~18,000	**4,850**	**27%**
Alt F	16,118	21,480	**(-5,362)**	**(-25%)**	~18,000	**(-1,882)**	**(-10%)**
Alt G	14,289	21,480	**(-7,191)**	**(-34%)**	~18,000	**(-3,711)**	**(-21%)**
Alt H	17,881	21,480	**(-3,599)**	**(-16%)**	~18,000	**(-119)**	**(-<1%)**
LONG-TERM							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	28,902	21,480	**7,422**	**26%**	~18,000	**10,902**	**61%**
Alt B	23,175	21,480	**1,695**	**8%**	~18,000	**5,175**	**29%**
Alt C	7,974	21,480	**(-13,506)**	**(-63%)**	~18,000	**(-10,046)**	**(-56%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	30,903	21,480	**9,423**	**44%**	~18,000	**12,903**	**72%**
Alt F	18,929	21,480	**(-2,551)**	**(-12%)**	~18,000	**929**	**5%**
Alt G	16,344	21,480	**(-5,136)**	**(-24%)**	~18,000	**(-1,656)**	**(-9%)**
Alt H	20,999	21,480	**(-481)**	**-2%)**	~18,000	**2,999**	**16%**

Table G.2. Calculation for each alternative and the potential outcome in head months using low range forage production estimates for existing, 10-year outcome, and long-term goal attainment contained in each alternative.

		Low Production	Based on	Holbrook	Research	6/20/00	
EXISTING							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	19,537	21,480	**(-1,936)**	**(-9%)**	~18,000	**1,537**	**8%**
Alt B	18,242	21,480	**(-3,238)**	**(-15%)**	~18,000	**242**	**1%**
Alt C	11,412	21,480	**(-10,068)**	**(-47%)**	~18,000	**(-6,588)**	**(-37%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	17,979	21,480	**(-3,501)**	**(-16%)**	~18,000	**(-21)**	**(<-1%)**
Alt F	14,644	21,480	**(-6,836)**	**(-32%)**	~18,000	**(-3,356)**	**(-19%)**
Alt G	14,135	21,480	**(-7,345)**	**(-34%)**	~18,000	**(-3,865)**	**(-21%)**
Alt H	16,246	21,480	**(-5,154)**	**(-24%)**	~18,000	**(-1,754)**	**(-10%)**
10-YEAR							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	21,667	21,480	**187**	**<1%**	~18,000	**3,667**	**20%**
Alt B	15,021	21,480	**(-6,459)**	**(-30%)**	~18,000	**(-2,979)**	**(-16%)**
Alt C	9,902	21,480	**(-11,578)**	**(-54%)**	~18,000	**(-8,098)**	**(-45%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	19,236	21,480	**(-2,244)**	**(-10%)**	~18,000	**1,236**	**7%**
Alt F	14,175	21,480	**(-7,305)**	**(-34%)**	~18,000	**(-3,825)**	**(-21%)**
Alt G	12,965	21,480	**(-8,515)**	**(-40%)**	~18,000	**(-5,035)**	**(-28%)**
Alt H	15,725	21,480	**(-5,755)**	**(-27%)**	~18,000	**(-2,275)**	**(-13%)**
LONG-TERM							
Alternative	**Potential Head Months Prod/Util.**	**Current Permitted Head Months**	**Difference plus/minus**	**% Reduction or Increase**	**Actual Use**	**Difference between Potential and Actual**	**% Reduction or Increase**
Alt A	23,255	21,480	**1,775**	**8%**	~18,000	**5,255**	**29%**
Alt B	17,861	21,480	**(-3,619)**	**(-17%)**	~18,000	**(-139)**	**(<-1%)**
Alt C	8,452	21,480	**(-13,028)**	**(-61%)**	~18,000	**(-9,548)**	**(-53%)**
Alt D	0	21,480	**(-21,480)**	**(-100%)**	~18,000	**(-18,000)**	**(-100%)**
Alt E	24,054	21,480	**2,574**	**12%**	~18,000	**6,054**	**34%**
Alt F	15,666	21,480	**(-5,814)**	**(-27%)**	~18,000	**(-2,334)**	**(-13%)**
Alt G	14,077	21,480	**(-7,403)**	**(-35%)**	~18,000	**(-3,923)**	**(-22%)**
Alt H	17,380	21,480	**(-4,100)**	**(-19%)**	~18,000	**(-620)**	**(-3%)**

Table G.4. Example of Calculations for Potential Head Months Using the Mid-range Forage Production Estimate.

Alternative A	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of acres**	**Acres**	**Production**	
Altemative A – Existing Potential	17% of acres in 0-5% cc	7921	1500	11881500
	24% of acres in 6-15% cc	11182	1150	12859300
	59% of acres in >15% cc	27491	500	13745500
	Total Suitable Acres	**46594**		**38486300**
Alternative A - 10 Year Potential	29% of acres in 0-5% cc	13512	1500	20268000
	25% of acres in 6-15% cc	11648	1150	13395200
	46% of acres in >15% cc	21434	500	10717000
	Total Suitable Acres	**46594**		**44380200**
Alternative A - Long-Term Potential	34% of acres in 0-5% cc	15842	1500	23763000
once DFC in Sagebrush cc is reached	33% of acres in 6-15% cc	15376	1150	17682400
	33% of acres in >15% cc	15376	500	7688000
	Total Suitable Acres	**46594**		**49133400**

	Pounds of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
A - Existing potential #'s of available forage	**38486300**	x60%	23091780	Divided by 34 pounds	679170	Divided by 30 days	**22639**	22639
A - 10-Year potential #'s of available forage	**44380200**	x60%	26628120	Divided by 34 pounds	783180	Divided by 30 days	**26106**	26106
A - Long-term potential #'s of available forage	**49133400**	x60%	29480040	Divided by 34 pounds	867060	Divided by 30 days	**28902**	28902

Alternative B	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of Acres**	**Acres**	**Production**	
Alternative B – Existing Potential	17% of acres in 0-5% cc	7901	1500	11851500
	24% of acres in 6-15% cc	11154	1150	12887100
	59% of acres in >15% cc	27420	500	13710000
	Total Suitable Acres	**46475**		**38448600**
Alternative B - 10 Year Potential	15% of acres in 0-5% cc	6971	1500	10456500
	17% of acres in 6-15% cc	7901	1150	9086150
	68% of acres in >15% cc	31603	500	15801500
	Total Suitable Acres	**46475**		**35344150**
Alternative B - Long-Term Potential	20% of acres in 0-5% cc	9295	1500	13942500
once DFC in Sagebrush cc is reached	45% of acres in 6-15% cc	20914	1150	24051100
	35% of acres in >15% cc	16266	500	8133000
	Total Suitable Acres	**46475**		**46126600**

	#s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
B - Existing Potential #'s of available forage	**38448600**							
Native (25% of total forage available)*	9612150	x45%	43254675	Divided by 34 pounds	127220	Divided by 30 days	4240	4240
Non-Native (74% of total forage available)*	28451964	x50%	14225982	Divided by 34 pounds	418411	Divided by 30 days	13947	13947
Riparian (1% of total forage available)	384486	x30%	115345	Divided by 34 pounds	33925	Divided by 30 days	1130	1130
								19317
B - 10-Year potential #'s of available forage	**35344150**							
Native (25% of total forage available)	8836038	x45%	3976217	Divided by 34 pounds	116947	Divided by 30 days	3898	3898
Non-Native (74% of total forage available)	26154671	x50%	13077335	Divided by 34 pounds	13077335	Divided by 30 days	12820	12820
Riparian (1% of total forage available)	353441	x30%	106032	Divided by 34 pounds	31185	Divided by 30 days	1039	1039
								17757
B - Long-Term potential #'s of available forage	**46126600**							
Native (25% of total forage available)	11531650	x45%	5189242	Divided by 34 pounds	152625	Divided by 30 days	5087	5087
Non-Native (74% of total forage available)	34133684	x50%	17066842	Divided by 34 pounds	501965	Divided by 30 days	16732	16732
Riparian (1% of total forage available)	461266	x30%	138379	Divided by 34 pounds	40699	Divided by 30 days	1356	1356
								23175

*Native = ~12,000 acres (25%)

*Non-native = ~36,000 acres (74%)

Alternative C	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of acres**	**Acres**	**Production**	
Alternative C – Existing Potential	17% of acres in 0-5% cc	7901	1500	11851500
	24% of acres in 6-15% cc	11154	1150	12887100
	59% of acres in >15% cc	27420	500	13710000
	Total Suitable Acres	**46475**		**38448600**
Alternative C - 10 Year Potential	7% of acres in 0-5% cc	3253	1500	4879500
	14% of acres in 6-15% cc	6507	1150	7483050
	79% of acres in >15% cc	36715	500	18357500
	Total Suitable Acres	**46475**		**30720050**
Alternative C - Long-Term Potential	0% of acres in 0-5% cc	0	1500	0
once DFC in Sagebrush cc is reached	0% of acres in 6-15% cc	0	1150	0
	100% of acres in >15% cc	46475	500	23237500
	Total Suitable Acres	**46475**		**23237500**

	#'s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
C - Existing potential #'s of available forage	**38448600**	x35%	1345700	Divided by 34 pounds	395794	Divided by 30 days	13193	**13193**
C - 10-Year potential #'s of available forage	**30720050**	x35%	10752017	Divided by 34 pounds	316235	Divided by 30 days	10541	**10541**
C - Long-term potential #'s of available forage	**23237500**	x35%	8133125	Divided by 34 pounds	239209	Divided by 30 days	7974	**7974**

Utilization levels in this alternative are 30-40%

A midpoint of 35% was used for calculations

Alternative D	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of acres**	**Acres**	**Production**	
Alternative D – Existing Potential	17% of acres in 0-5% cc	8079	1500	12118500
	24% of acres in 6-15% cc	11406	1150	13116900
	59% of acres in >15% cc	28040	500	14020000
	Total Capable Acres*	**47525**		**39255400**
Alternative D - 10 Year Potential	6% of acres in 0-5% cc	2852	1500	4278000
	15% of acres in 6-15% cc	7129	1150	8198350
	79% of acres in >15% cc	37544	500	18772000
	Total Capable Acres	**47525**		**31248350**
Alternative D - Long-Term Potential	0% of acres in 0-5% cc	0	1500	0
once DFC sagebrush cc is reached	0% of acres in 6-15% cc	0	1150	0
	100% of acres in >15% cc	47525	500	23762500
	Total Capable Acres	**47525**		**23762500**

	#'s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
D - Existing potential #'s of available forage	0	0	0	0	0	0	0	0
D - 10-Year potential #'s of forage	0	0	0	0	0	0	0	0
D - Long-term potential #'s of forage	0	0	0	0	0	0	0	0

Computations based on capable acres rather than suitable. No grazing permitted in this alternative

Alternative E	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of acres**	**Acres**	**Production**	
Alternative E – Existing Potential	17% of acres in 0-5% cc	7921	1500	11881500
	24% of acres in 6-15% cc	11182	1150	12859300
	59% of acres in >15% cc	27491	500	13745500
	Total Suitable Acres	**46594**		**38486300**
Alternative E - 10 Year Potential	26% of acres in 0-5% cc	12114	1500	18171000
	23% of acres in 6-15% cc	10716	1150	12323400
	51% of acres in >15% cc	23764	500	11882000
	Total Suitable Acres	**46594**		**42376400**
Alternative E - Long-Term Potential	> 50% of acres in 0-5% cc (60%)	27958	1500	41937000
once DFC in Sagebrush cc is reached	< 25% of acres in 6-15% cc (20%)	9318	1150	10715700
	< 25% of acres in >15% cc (20%)	9318	500	4659000
	Total Suitable Acres	**46594**		**57311700**

	#'s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
E - Existing potential #'s of available forage	**38486300**	x55%	21044017	Divided by 34 pounds	601257	Divided by 30 days	20042	**20042**
E - 10-Year potential #'s of available forage	**42376400**	x55%	23307020	Divided by 34 pounds	685500	Divided by 30 days	22850	**22850**
E - Long-term potential #'s of available forage	**57311700**	x55%	31521435	Divided by 34 pounds	927101	Divided by 30 days	30903	**30903**

Utilization levels in this alternative are 50-60%

A midpoint of 55% was used for calculations

Alternative F	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of Acres**	**Acres**	**Production**	
Alternative F - Existing Potential	17% of acres in 0-5% cc	7921	1500	11881500
	24% of acres in 6-15% cc	11182	1150	12859300
	59% of acres in >15% cc	27491	500	13745500
	Total Suitable Acres	**46594**		**38486300**
Alternative F - 10 Year Potential	9% of acres in 0-5% cc	4193	1500	6289500
	31% of acres in 6-15% cc	14445	1150	16611750
	60% of acres in >15% cc	27956	500	13798000
	Total Suitable Acres	**46594**		**36699250**
Alternative F - Long-Term Potential	10% of acres in 0-5% cc	4659	1500	6988500
once DFC in Sagebrush cc is reached	50% of acres in 6-15% cc	23298	1150	26792700
	40% of acres in >15% cc	18637	500	9318500
	Total Suitable Acres	**46594**		**43099700**

	#'s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
F - Existing potential #'s of available forage	**38486300**							
Riparian (2%)	769726	x35%	269404	Divided by 34 pounds	7923	Divided by 30 days	264	264
Other Vegetation (98%)	37716574	x45%	16972458	Divided by 34 pounds	499189	Divided by 30 days	16639	16639
								16,903
F - 10-Year potential #'s of available forage	**36699250**							
Riparian (2%)	733985	x35%	256894	Divided by 34 pounds	7555	Divided by 30 days	251	251
Other Vegetation (98%)	35965265	x45%	16184369	Divided by 34 pounds	476010	Divided by 30 days	15867	15867
								16,118
F - Long-term potential #'s of available forage	**43099700**							
Riparian (2%)	861994	x35%	301697	Divided by 34 pounds	8873	Divided by 30 days	295	295
Other Vegetaion (98%)	42237706	x45%	19006967	Divided by 34 pounds	559028	Divided by 30 days	18634	18634
								18,929

Riparian utilization levels are 20-50% based on PFC of stream. A midpoint of 35% was used for Calculations

Alternative G	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of Acres**	**Acres**	**Production**	
Alterntaive G - Existing Potential	17% of acres in 0-5% cc	7901	1500	11851500
	24% of acres in 6-15% cc	11154	1150	12887100
	59% of acres in >15% cc	27420	500	13710000
	Total Suitable Acres	**46475**		**38448600**
Alternative G - 10 Year Potential	10% of acres in 0-5% cc	4647	1500	6970500
	19% of acres in 6-15% cc	8830	1150	10154500
	71% of acres in >15% cc	32998	500	16499000
	Total Suitable Acres	**46475**		**33624000**
Alternative G - Long-Term Potential	10% of acres in 0-5% cc	4647	1500	6970500
once DFC in Sagebrush cc is reached	35% of acres in 6-15% cc	16266	1150	18705900
	50% of acres in >15% cc	25562	500	12781000
	Total Suitable Acres	**46475**		**38457400**

	#'s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
G - Existing potential #'s of available forage	**38448600**							
Riparian (11%) (includes riparian pastures)*	4229346	x30%	12688038	Divided by 34 pounds	37317	Divided by 30 days	1243	1243
Other Vegetation (89%)*	34219254	x45%	15398664	Divided by 34 pounds	452901	Divided by 30 days	15096	15096
								16339
G - 10-Year potential #'s of available forage	**33624000**							
Riparian (11%) includes riparian pastures	3698640	x30%	1109592	Divided by 34 pounds	32635	Divided by 30 days	1087	1087
Other Vegetation (89%)	29925360	x45%	13466412	Divided by 34 pounds	396070	Divided by 30 days	13202	13202
								14289
G - Long-term potential #'s of available forage	**38457400**							
Riparian (11%) includes riparian pastures	4230314	x30%	12690942	Divided by 34 pounds	37326	Divided by 30 days	1244	1244
Other Vegetation (89%)	34227086	x45%	15402188	Divided by 34 pounds	453005	Divided by 30 days	15100	15100
								16344

* Riparian RX in this alternative
contains ~5,000 acres (11% of suitable acres)

Alternative H	**Sagebrush cc**	**Suitable**	**Avg. #'s of**	**Total Forage Available**
Forage Production	**% of Acres**	**Acres**	**Production**	
Alternative H - Existing Potential	17% of acres in 0-5% cc	7921	1500	11881500
	24% of acres in 6-15% cc	11182	1150	12859300
	59% of acres in >15% cc	27491	500	13745500
	Total Suitable Acres	**46594**		**38486300**
Alternative H - 10 Year Potential	9% of acres in 0-5% cc	4193	1500	6289500
	31% of acres in 6-15% cc	14445	1150	16611750
	60% of acres in >15% cc	27956	500	13798000
	Total Suitable Acres	**46594**		**36699250**
Alternative H - Long-Term Potential	10% of acres in 0-5% cc	4659	1500	6988500
once DFC in Sagebrush cc is reached	50% of acres in 6-15% cc	23298	1150	26792700
	40% of acres in >15% cc	18637	500	9318500
	Total Suitable Acres	**46594**		**43099700**

	#'s of Available Forage	**Utilization level**	**Equals**	**Divided by 34 pounds**	**Equals**	**Divided by 30 days**	**Equals**	**Potential HMS**
H - Existing potential #'s of available forage	**38486300**							
Riparian (2%)	769726	x35%	269404	Divided by 34 pounds	7923	Divided by 30 days	264	264
Other Vegetation (98%)	37716574	x50%	18858287	Divided by 34 pounds	554655	Divided by 30 days	18488	18488
								18752
H - 10-Year potential #'s of available forage	**36699250**							
Riparian (2%)	733985	x35%	256894	Divided by 34 pounds	7555	Divided by 30 days	251	251
Other Vegetation (98%)	35965265	x50%	17982632	Divided by 34 pounds	528900	Divided by 30 days	17630	17630
								17881
H- Long-term potential #'s of available forage	**43099700**							
Riparian (2%)	861994	x35%	301697	Divided by 34 pounds	8873	Divided by 30 days	295	295
Other Vegetaion (98%)	42237706	x50%	21118853	Divided by 34 pounds	621142	Divided by 30 days	20704	20704
								20999

Riparian utilization levels are 20-50% based on PFC of stream. A midpoint of 35% was used for calculations

Table G.5. SUMMARY TABLE

Table G.5. SUMMARY Table

Head Months Based on Three Calculations of Forage Production

Low – Based on Research at Holbrook, Idaho
Mid – Based on Dr. Alma Winward's Assessment
High – Based on transect data, Westside Ranger District, Malad Office

Alternative	Low Production HMs	Mid Production HMs	High Production HMs	Average HMs
Alt A				
Year 0	19,537	22,639	27,918	23,364
Year 10	21,667	26,106	31,516	26,429
Long-term	23,255	28,902	33,868	28,675
Alt B				
Year 0	18,242	19,317	22,532	20,030
Year 10	15,021	17,757	21,427	18,000
Long-term	17,861	23,175	25,139	22,058
Alt C				
Year 0	11,412	13,193	16,244	13,616
Year 10	9,902	10,541	13,890	11,444
Long-term	8,452	7,974*	11,766	9,397
Alt D				
Year 0	0	0	0	0
Year 10	0	0	0	0
Long-term	0	0	0	0
Alt E				
Year 0	17,979	20,042	25,591	21,204
Year 10	19,236	22,850	27,884	23,323
Long-term	24,054	30,903	36,632	30,529
Alt F				
Year 0	14,644	16,903	20,844	17,463
Year 10	14,175	16,118	19,696	16,663
Long-term	15,666	18,929	21,508	18,701
Alt G				
Year 0	14,135	16,339	20,118	16,864
Year 10	12,965	14,289	18,248	15,167
Long-term	14,077	16,344	19,543	16,654
Alt H				
Year 0	16,246	18,752	23,124	19,374
Year 10	15,725	17,881	21,850	18,485
Long-term	17,380	20,999	23,860	20,746

* Differences between the low and mid point calculations are attributable to estimated pounds per acre in the greater than 15% canopy cover. In the low production calculations 530 pounds per acre was used to calculate estimated forage in the greater than 15% canopy cover. The mid-point production figures used 500 pounds per acre in the greater than 15% canopy cove

Table G.6. Estimated Forage Production on the Grassland, Using Mid Point Production Figures
Existing on suitable acres Year 0, Existing on suitable acres Year 10, Existing on suitable acres Long-term Year 50
Curlew National Grassland, June 2,000

Alt	Sagebrush Canopy Cover	#'s of production by canopy cover class	Existing % cc	Existing suitable acres	Existing #'s of Prod.	10-yr % cc	10-yr Suitable Acres	10-yr #'s of Prod.	DFC % cc (Avg.)	DFC Suitable Acres	DFC #'s of Prod.
Alt A	0-5%	1500	17%	7,921	11,881,500	29%	13,512	20,268,000	34%	15,842	23,763,000
	6-15%	1150	24%	11,182	12,859,300	25%	11,648	13,395,200	33%	15,376	17,682,400
	>15%	500	59%	27,491	13,745,500	46%	21,434	10,717,000	33%	15,376	7,688,000
Total			100%	46,594	38,486,300	100%	46,594	44,380,200	100%	46,594	49,1133,400
Alt B	0-5%	1500	17%	7,901	11,851,500	15%	6,971	10,456,500	20%	9,295	13,942,500
	6-15%	1150	24%	11,154	12,887,100	17%	7,901	9,086,150	45%	20,914	24,051,100
	>15%	500	59%	27,420	13,710,000	68%	31,603	15,801,500	35%	16,266	8,133,000
Total			100%	46,475	38,448,600	100%	46,475	35,344,150	100%	46,475	46,126,600
Alt C	0-5%	1500	17%	7,901	11,851,500	7%	3,253	4,879,500	0%	0	0
	6-15%	1150	24%	11,154	12,887,100	14%	6,507	7,483,050	0%	0	0
	>15%	500	59%	27,420	13,710,000	79%	36,715	18,357,500	100%	46,475	23,237,500
Total			100%	46,475	38,448,600	100%	46,475	30,720,050	100%	46,475	23,237,500
Alt D	0-5%	1500	17%	8,079	12,118,500	6%	2,852	4,278,000	0%	0	0
	6-15%	1150	24%	11,406	13,116,900	15%	7,129	8,198,350	0%	0	0
	>15%	500	59%	28,040	14,020,000	79%	37,544	18,772,000	100%	47,525	23,762,500
Total			100%	47,525	39,255,400	100%	47,525	31,248,350	100%	47,525	23,762,500
Alt E	0-5%	1500	17%	7,921	11,881,500	26%	12,114	18,171,000	60%	27,958	41,937,000
	6-15%	1150	24%	11,182	12,859,300	23%	10,716	12,323,400	20%	9,318	10,715,700
	>15%	500	59%	27,491	13,745,500	51%	23,764	11,882,000	20%	9,318	4,659,000
Total			100%	46,594	38,486,300	100%	46,594	42,376,400	100%	46,594	57,311,700
Alt F	0-5%	1500	17%	7,921	11,881,500	9%	4,193	6,289,500	10%	4,659	6,988,500
	6-15%	1150	24%	11,182	12,859,300	31%	14,445	16,611,750	50%	23,298	26,792,700
	>15%	500	59%	27,491	13,745,500	60%	27,956	13,798,000	40%	18,637	9,318,500
Total			100%	46,594	38,486,300	100%	46,594	36,699,250	100%	46,594	43,099,700
Alt G	0-5%	1500	17%	7,901	11,851,500	10%	4,647	6,970,500	10%	4,647	6,970,500
	6-15%	1150	24%	11,154	12,887,100	19%	8,830	10,154,500	35%	16,266	18,705,900
	>15%	500	59%	27,420	13,710,000	71%	32,998	16,499,000	55%	25,562	12,781,000
Total			100%	46,475	38,448,600	100%	46,475	33,624,000	100%	46,475	38,457,400
Alt H	0-5%	1500	17%	7,921	11,881,500	9%	4,193	6,289,500	10%	4,659	6,988,500
	6-15%	1150	24%	11,182	12,859,300	31%	14,445	16,611,750	50%	23,298	26,792,700
	>15%	500	59%	27,491	13,745,500	60%	27,956	13,798,000	40%	18,637	9,318,500
Total			100%	46,594	38,486,300	100%	46,594	36,699,250	100%	46,594	43,099,700